

IN THE CLAIMS:

1. (Currently Amended) A method of error detection in an inkjet printing apparatus having a printer host coupled to a print head, the method comprising the acts of:

communicating a first serial data stream between the printer host and the print head, wherein the act of communicating comprises the acts of providing a clocking control signal from the printer host; and

utilizing the clocking control signal to synchronously sequence the first serial data stream;

inserting a reference data stream into the first serial data stream, wherein the reference data stream is combination of start, data, sync, error and stop bits formed with a non-uniform bit pattern; and

validating the first serial data stream based on the reference data stream.

2. (Canceled).

3. (Canceled).

4. (Previously Presented) The method of claim 1, further comprising the acts of:
transmitting a print head data stream comprising the first serial data stream and the reference data stream from the print head; and
receiving the print head data stream at the printer host.

5. (Previously Presented) The method of claim 1, wherein the act of inserting the reference data stream further comprises the act of adding to the first serial data stream at least one of a plurality of start bits, a plurality of sync bits, a plurality of stop bits, and at least one error detection bit.

6. (Previously Presented) The method of claim 5, wherein the error detection bit comprises at least one of a parity check code, residue code, "m" of "n" code, duplication code, cyclic code, arithmetic code, Berger code, Hamming code, horizontal parity code, or vertical parity code.

7. (Previously Presented) The method of claim 5, wherein the plurality of start bits have at least two bits of different voltage values.

8. (Canceled)

9. (Canceled)

10. (Previously Presented) The method of claim 1, further comprising the act of retrieving the first serial data stream stored in a print head memory.

11. (Currently Amended) A method of error detection in an inkjet printing apparatus having a printer host coupled to a print head, the method comprising the acts of:

receiving a serial command at the print head from the printer host, the serial command comprising a request for a data stream and a request for a reference data stream at a reference location within the data stream, wherein the reference data stream comprises a bit width of at least two adjacent bits;

retrieving the data stream from a print head memory;

adding the reference data stream into the data stream at the reference location, thereby forming a first serial data stream;

receiving the first serial data stream at the printer host from the print head wherein the act of receiving comprises the acts of providing a clocking control signal from the printer host and utilizing the clocking control signal to synchronously sequence the first serial data stream;

searching for the reference data stream at the reference location within the received first serial data stream, wherein the reference data stream is combination of start, data, sync, error and stop bits formed with a non-uniform bit pattern;

validating the received first serial data stream when the received first serial data stream comprises the reference data stream at the reference location; ~~and~~

recognizing an incorrect received first serial data stream; and

detecting a framing error or a link error from the incorrect received first serial data stream.

12. (Canceled)

13. (Canceled)

14. (Previously Presented) The method of claim 11, wherein the act of inserting the reference data stream comprises the act of adding to the first serial data stream at least one of a plurality of start bits, a plurality of sync bits, a plurality of stop bits, and at least one error detection bit.

15. (Previously Presented) The method of claim 14, wherein the at least one error detection bit comprises a parity check code, residue code, "m" of "n" code, duplication code, cyclic code, arithmetic code, Berger code, Hamming code, horizontal parity code, or vertical parity code.

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Currently Amended) A data error detection system on an inkjet print head coupled to a host, the data error detection system comprising:

a clocking control signal generated by the host;

a print head communication link coupling the print head and the host, and configured to communicate a first serial data stream between the print head and the host, wherein the first serial data stream is synchronously sequenced at a frequency of the clocking control signal;

a data stream ~~register~~ processor coupled to the print head, and configured to insert a reference data stream into the first serial data stream at a reference location wherein the reference data stream is combination of start, data, sync, error and stop bits formed with a non-uniform bit pattern; and

a data validating ~~controller~~ module coupled to the host, and configured to validate the

first serial data stream based on the reference data stream, recognize an incorrect first serial data stream, and detect a framing error or a link error from the incorrect first serial data stream.

21. (Canceled)

22. (Canceled)

23. (Currently Amended) The data error detection system of claim 20, wherein the data stream ~~register~~ processor adds at least one of a plurality of start bits, a plurality of sync bits, a plurality of stop bits, and at least one error detection bit to the first serial data stream.

24. (Previously Presented) The data error detection system of claim 23, wherein the at least one error detection bit comprises a parity check code, residue code, "m" of "n" code, duplication code, cyclic code, arithmetic code, Berger code, Hamming code, horizontal parity code, or vertical parity code.

25. (Previously Presented) The data error detection system of claim 20, wherein the inkjet print head retrieves the first serial data stream from a print head memory.

26. (Canceled)

27. (Canceled)

28. (Currently Amended) An inkjet printing apparatus comprising:

a print head configured to insert a reference data stream into a first serial data stream at a reference location, and synchronously sequence and transmit the first serial data stream according to a clocking control signal wherein the reference data stream is combination of start, data, sync, error and stop bits formed with a non-uniform bit pattern; and

a print controller adapted to be coupled to the print head, and configured to receive the first serial data stream from the print head, search for a validating data stream from the transmitted first serial data stream, to validate the received first serial data stream when the

validating data stream comprises a valid data stream pattern, and to act on the valid or invalid first serial data stream to recognize an incorrect received first serial data stream, and to detect a framing error or a link error from the incorrect received first serial data stream.

29. (Canceled)

30. (Canceled)

31. (Previously Presented) The inkjet printing apparatus of claim 28, wherein the print head retrieves the first serial data stream from a print head memory.

32. (Previously Presented) The inkjet printing apparatus of claim 28, wherein the print head inserts a reference data stream into the first serial data stream.

33. (Previously Presented) The inkjet printing apparatus of claim 32, wherein the print head adds to the first serial data stream at least one of a plurality of start bits, a plurality of sync bits, a plurality of stop bits, and at least one error detection bit.

34. (Previously Presented) The inkjet printing apparatus of claim 33, wherein the at least one error detection bit comprises a parity check code, residue code, "m" of "n" code, duplication code, cyclic code, arithmetic code, Berger code, Hamming code, horizontal parity code, or vertical parity code.

35. (Original) The inkjet printing apparatus of claim 32, wherein the reference data stream has a reference pattern, and wherein the print controller compares the reference pattern with the valid data pattern.

36. (Canceled)

37. (Canceled)-

38. (Currently Amended) A print head adapted to be used in a printing apparatus, to be coupled to a host, and to store a first data stream in memory, the print head comprising a data stream ~~module~~ processor adapted to retrieve the first data stream from the memory, to insert a reference data stream comprising a reference pattern into the first data stream at a reference location thereby forming a transmit data stream, and to synchronously sequence and serially transmit the transmit data stream to the host at a control signal clock frequency, so that the host, upon receiving a data stream, can validate the received data stream if the received data stream comprises

the transmit data stream with the inserted reference data stream at the reference location, wherein the reference data stream is combination of start, data, sync, error and stop bits formed with a non-uniform bit pattern.

39. (Currently Amended) The print head of claim 38, ~~and wherein the data stream module~~ comprises a data stream ~~register~~ processor adapted to insert the reference data stream.

40. (Canceled)

41. (Original) The print head of claim 38, and wherein the reference data stream comprises at least one of a plurality of start bits, a plurality of sync bits, a plurality of stop bits, and at least one error detection bit.

42 (Previously Presented) The print head of claim 41, and wherein the at least one error detection bit comprises a parity check code, residue code, "m" of "n" code, duplication code, cyclic code, arithmetic code, Berger code, Hamming code, horizontal parity code, for vertical parity code.

43. (Canceled)

44. (Canceled)

45. (Canceled)